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BREAK THROUGH IN 10 MILLION FRY PRODUCTION AT KHUTELABHATA FISH SEED FARM, DURG, MADHYA PRADESH

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ABSTRACT

This paper presents a resume of the work carried on the production of 10 million major carp fry by stocking at the rate of 10 million spawn per hectare in 38 nursery ponds covering 2.1 ha. water spread area at Khutelabhata fish seed farm, Durg, (Madhya Pradesh). Observations made on the effect of various types of feed on survival and growth rate of Indian Major carp fry in nurseries are reported. Physico-chemical parameters and plankton populations in the three sets of nurseries are given. The experiments indicates that optimum survival rate of fry can be obtained by feeding tender spawn with animal protein feed. The economic viability of the experiment discussed shows that for a little increase in the expenditure on improved artificial food the survival and growth of fry can be enhanced.

INTRODUCTION

The fish production is based on various inter-related factors such as inputs, comprising manures, artificial feed etc. "Fish Seed" is the most important component for the pisciculture. Rearing of spawn in nursery pond constitutes the first stage of fish culture. In recent years, much attention has been paid to improve the techniques of rearing carp spawn (Alikunhi, 1951, and 1957 ; Alikunhi *et al*, 1955 ; Anon, 1958, 1964) and consiquently, an average survival of 50% has been obtained.

In the present work the field experiments were conducted on the use of raw poultry egg with the combination of artificial feed viz. ground nut oil cake + rice bran to raise spawn to fry at Khutelabhata Fish Seed Farm, Durg, Madhya pradesh in July 1980. The results of these experiments are presented in the following account.

MATERIALS AND METHODS

34 nursery ponds each 0.05 ha in area and 4 nursery pond each 0.1 ha in area selected at Khutelabhata fish seed farm, Durg (M.P), to conduct three experiments each in 11, 13, 14 ponds on the rearing of spwan of Indian major carp (measuring 6.0mm in length) for 15 to 25 days. These are katcha ponds with a depth of 1 meter and the bottom silt layer of about 4-6cm.

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The initial preparation included draining of ponds to remove the unwanted resident species, application of lime at the rate of 200 kg per hectare. The treated sewage water from Bhilai Industrial Complex rich with nutrients and fresh water from near by nallah in 1 : 1 was drawn into the nurseries by guarding inlets with fine meshed cloth to avoid entry of extraneous fishes. Five days before stocking with spawn each pond is treated with combination of organic + inorganic fertilizer such as raw cattle dung 800 kg/ha and ground nut oil cake 350 kg/ha + single superphosphate 150 kg/ha on 1st day and again on the 3rd day with raw cattle dung at the rate of 400kg/ha and ground nut oil cake 250kg/ha.

Twenty four hours before stocking, nursery ponds were treated with oil emulsion made with "Teepol B-300", H, S. D. and water at the rate of 500ml, 2.5 litre and 40 litre per hectare respectively to kill aquatic insects,

The 38 nursery ponds covering 2.1 ha water spread area were stocked with 21 million Indian major carp spawn procured from wet bund at the rate of 10 million per hectare as shown in the Table.

ARTIFICIAL FEEDING

Spawn in each set of nursery ponds were fed with different kinds of artificial feed. The 1st set was kept on plankton developed by fertilization, 2nd set treated with rice bran and ground nut oil cake and 3rd set rice bran + ground nut oil cake + raw poultry egg. The rice bran and ground nut oil cake were finely powdered, seived and sprinkled all over the pond once daily in the morning. The raw poultry egg was beaten to liquid form and sprayed all over the pond separately after treatment of rice bran + ground nut oil cake. The methods of application of artificial feed given as follows :

Ist Set —All ponds were fertilised on 5th day with 500kg/raw cattle dung + 125kg ground nut oil cake + 62.5kg single superphosphate and on 10th day with 250kg R. C. D. + 62.5kg G. O. C. + 31.25 kg single superphosphate per hectare per pond.

IInd & IIIrd Set : The spawn was fed with R. B. + G. O. C. 1 : 1 and the IIIrd set was given additional feed of raw poultry egg once in a day in the morning per pond as follows :—

	IInd Set	**IIIrd Set**
Ist & 2nd Day	Natural food, *i.e.* plankton	—
3rd & 6th day	Twice the initial weight of spawn stocked (each spawn weighing 0.0014 g).	R.B + G O.C + One egg.
7th & 10th Day	Thrice the initial weight of spawn stocked.	R.B + G.O.C. + Two eggs.
11th & 13th Day	Four times the initial	R.B + G.O.C. + Three eggs.

The nutritional value of the artificial feed as reported by Alikunhi (1966) is as follows :

Ingredients	Crude protein	Fat	Carbohydrates	Febre	Ash
G N. oil cake	36%	10%	32%	—	19%
Rice bran	13-16%	4-18%	43-47%	6-9%	13-15%
Poultry egg	16-3%	31-9%	—	—	1.7%

RESULTS

PHYSICO-CHEMICAL CONDITIONS

During 15-25 days rearing period water temperature varied from 27°C to 30.5°C, pH 7.1 to 7.6, dissolved oxygen 5.6 to 10.4ppm; free carbondioxide 0–10ppm and total alkalinity 56 to 140ppm. The water colour was usually light green and the depth varied from 60 to 95cm.

PLANKTON

Plankton sample were collected by 50 litres of water from each pond filtered through No. 25 bolting silk on alternate days and were studied quantitatively. The predominant zooplankters were cladocerans, followed by copepods and rotifers. The volume of zooplankton ranged from 0.20 (1st set) to 1.8 c.c. (IIIrd set).

RATE OF SURVIVAL OF SPAWN

The details of stocking, harvesting and percentage of survival of fry in each pond is shown in Table. In the Ist set ponds treated only with fertilizer showed low survival rate (34.2 — 50%). In the IInd set treated with G O.C. + R.B optimum survival rate (47.8 — 55%) was obtained. The IIIrd set treated with G O.C. + R.B + Poultry egg. had shown remarkable survival rate ranging from 52.4 to 75.2%.

GROWTH OF SPAWN

The assessment of growth of spawn on 15th day in three sets of pond ranged from 19 to 25mm in size. The spawn had shown better growth in the ponds treated with R.B + G.O C. + Poultry egg (25mm), while in the ponds with R.B + GOC and fertilizer alone showed 20 and 19mm respectively.

FRY PRODUCTION

The harvesting of fry was started after 16th day from nursery ponds. The 10 million fry were harvested and disposed during 15-28 days from 31 nursery ponds stocked with 21 millions spawn The survival rate ranged from 34-9 to 75.2% from three sets of ponds treated with different artificial feed. (Table)

DISCUSSION

Schaperclaus (1933), Kawamot (196), Swingle (1968), reported that besides natural food and other growth factors which are related to an increase in

TABLE : The Particulars of Stocking, Harvesting and Survival of Indian Major Carps Fry in Nursery Ponds

Experiment No.	Pond No.	Size of pond Ha.	Date of stocking	Size in mm	Total no. in lakhs	Date of harvesting	Size in mm	Total no. in lakhs	Survival
Ist Set :	1.	0.05	6-7-'80	6	5.0	30-7-'80	20 to 25	2,01,000	40.2%
	2.	,,	,,	,,	,,	,,	,,	2,44,000	48.8%
Fertilizer with R.C.D.	3.	,,	,,	,,	,,	,,	,,	2,50,000	50. %
+ G.O.C. + S.P in	4.	,,	,,	,,	,,	,,	,,	2,32,000	46.4%
Instalments	5.	,,	,,	,,	,,	,,	,,	2,48,000	49.6%
	6.	,,	,,	,,	,,	,,	,,	2,35,000	47 %
	7.	,,	,,	,,	,,	,,	,,	2 30,000	46 %
	R. P. 1	0:1	,,	,,	10.	31-7-'80	,,	3,51,000	35.1%
	R. P. 2	,,	,,	,,	,,	3-8-'80	,,	3,42,000	34.2%
	R. P. 2	,,	,,	,,	,,	,,	,,	3,62,000	36.2%
	R. P. 4	,,	,,	,,	,,	,,	,,	3,49,000	34.9%
IInd Set :	8.	0.05	,,	,,	5.0	21-7-'80	22 to 25	2,74,000	54.8%
	9.	,,	,,	,,	,,	24-7-'80	,,	2,39,000	47.8%
Fertilizer + artificial	10.	,,	,,	,,	,,	24-7-'80	,,	2,61,000	52.2%
feed rice bran +	11.	,,	,,	,,	,,	22-7-'80	,,	2,56,000	51.2%
G.O.C. 1 : 1 ratio.	12.	,,	,,	,,	,,	22-7-'80	,,	2,75,000	55 %
	13.	,,	,,	,,	,,	22-7-'80	,,	2,62,000	52.4%
	14.	,,	,,	,,	,,	28-7-'80	,,	2,56,000	51.2%
	15.	,,	,,	,,	,,	24-7-'80	,,	2,41,000	48.2%
	16.	,,	,,	,,	,,	23-7-'80	,,	2,69,000	53.8%
	17.	,,	,,	,,	,,	24-7-'80	,,	2,50,000	50 %
	18.	,,	,,	,,	,,	24-7-'80	,,	2,66,000	53.2%
	19.	,,	,,	,,	,,	30-7-'80	,,	2,62,000	52.4%
	20.	,,	,,	,,	,,	30-7-'80	,,	2,52,000	50.4%
	21.	0.05	,,	,,	,,	21-7-'80	23 to 25	3,62,000	72.4%
IIIrd Set :	22.	,,	,,	,,	,,	21-7-'80	,,	3,24,000	64.8%
	23.	,,	,,	,,	,,	18-7-'80	,,	3,78,000	73.6%
Fertilizer + rice bran	24.	,,	,,	,,	,,	18-7-'80	,,	3,76,000	75.2%
+ G.O.C. + poultry	25.	,,	,,	,,	,,	21-7-'80	,,	3,26,000	65.2%
eggs as artificial feed.	26.	,,	,,	,,	,,	21-7-'80	,,	3,39,000	67.8%
	27.	,,	,,	,,	,,	22-7-'80	,,	2,95,000	59 %
	28.	,,	,,	,,	,,	22-7-'80	,,	3,08,000	60 1%
	29.	,,	,,	,,	,,	28-7-'80	,,	2,87,000	57.4%
	30.	,,	,,	,,	,,	28-7-'80	,,	2,92,000	58.4%
	31.	,,	,,	,,	,,	28-7-'80	,,	2,62,000	52.4%
	32.	,,	,,	,,	,,	28-7-'80	,,	2,80,000	56.0%
	33.	,,	,,	,,	,,	19-7-'80	,,	2,69,000	53.8%
	34.	,,	,,	,,	,,	24-7-'80	,,	3,53,000	70.6%

the population, artificial feeding plays a prominent role in influencing the growth and survival rate of fish seed. The results of the present experiments indicate that the spawn reared on plankton alone in the Ist set by adding fertilizer showed minimum growth and less survival rate of 34.2 — 50% (av. 42.5%). While the spawn feed on artificial feed such as R.B + G.O.C. showed optimum growth and in this category survival rate ranged from 47.8 to 55% (av. 51.7%). The third set of ponds treated with rice bran + ground nut oil cake + raw poultry eggs showed fast growth of fry and good realisation amounting to 52.4—75.2% (av. 63.3%). The utility of raw poultry egg as artificial feed which contains 16.3% protein and 31.9% fat not only helps to get quick growth of fry but it is also more economical in pond management.

The production of 10 million major carp fry in a single crop in a period of one month from 38 nursery ponds at Fish Seed Farm Khutelapbhata, Durg, M. P. is a break through in the State of Madhya Pradesh as well as in the country.

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